GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
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May 14, 2018

Mr. Scot Fitzgerald
CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352

Re: CHPRC SAF S18-004
Work Order: 448316
SDG: GEL448316

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on April 18, 2018. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4505.

Sincerely,

Heather Shaffer

Heather Shaffer
Project Manager

Purchase Order: 300071 - 7H
Chain of Custody: S18-004-089, S18-004-090, S18-004-091, S18-004-093, S18-004-099, S18-004-101, S18-004-102, S18-004-105, S18-004-106, S18-004-131, S18-004-168, S18-004-174, S18-004-176, S18-004-180, S18-004-184, S18-004-208, S18-004-212, S18-004-226 and S18-004-397
Enclosures

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Case Narrative

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF S18-004
SDG: GEL448316

May 14, 2018

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary

Sample receipt

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on April 18, 2018, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Items of Note All efforts were made by the lab to meet any short hold times. Samples that were analyzed outside of the initial hold time but still within 2X hold time will be noted in the lab case narrative.

Sample Identification
The laboratory received the following samples:

Laboratory Identification	Sample Description
448316001	B3HTC5
448316002	B3HTF2
448316003	B3HTF8
448316004	B3HT38
448316005	B3HT51
448316006	B3HVC9
448316007	B3HVF1
448316008	B3HV15
448316009	B3HTC7
448316010	B3HTC4
448316011	B3HTD0
448316012	B3HTD6
448316013	B3HTD1
448316014	B3HTD7
448316015	B3HT59
448316016	B3HT56
448316017	B3HTP1
448316018	B3HTP4
448316019	B3HVD1
448316020	B3HVC8
448316021	B3HVF9
448316022	B3HVF6

448316023	B3HV20
448316024	B3HV26
448316025	B3HV21
448316026	B3HV27
448316027	B3HTW4
448316028	B3HWN5

Case Narrative

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: General Chemistry, Metals and Radiochemistry.

We certify that this package is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager (or designee) and the laboratory's client services representative as verified by their signatures on this report.

Heather Shaffer
Project Manager

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL448316
Work Order #: 448316

Metals

Determination of Metals by ICP

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Calibration Information

Continuing Calibration Blanks (CCB) Requirements
All continuing calibration blanks(CCB) bracketing the sample in this SDG did not meet the acceptance criteria. The samples bracketed by this CCB, however, contained sodium at a concentration at least ten times greater than the concentration in the CCB. This indicates that any contribution to the concentration of sodium in the samples from potential laboratory contamination would be minimal. 448316023 (B3HV20), 448316024 (B3HV26), 448316025 (B3HV21) and 448316026 (B3HV27).

Quality Control (QC) Information

Method Blank (MB) Statement
The samples in this SDG contained analytes at concentrations more than ten times the amount present in the method blank, therefore the data was not adversely affected.

Sample	Analyte	Value
1204011923 (MB)	Potassium and Sodium	See applicable report

Matrix Spike (MS/MSD) Recovery Statement
The MS/MSD (See Below) did not meet the recommended quality control acceptance criteria for percent recoveries for the following applicable analyte. The post spike also did not meet the required control limits; thus, confirming matrix interferences and/or sample non-homogeneity.

Sample	Analyte	Value
1204011925 (B3HV20MS)	Sodium	73.8* (75%-125%)

Post Spike (PS) Recovery Statement
The PS did not meet the recommended quality control acceptance criteria for percent recoveries for all applicable analytes and verifies the presence of matrix interferences.

Sample	Analyte	Value
1204023006 (B3HV20PS)	Sodium	57.2* (75%-125%)

Determination of Metals by ICP-MS

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

General Chemistry

Ion Chromatography

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Holding Times
Samples (See Below) were initially analyzed within holding; however, the holding times had expired prior to reanalysis of diluted samples. The data is qualified.

Sample	Analyte	Value
1204011852 (B3HT51DUP)	Chloride and Nitrate	Received 18-APR-18, within holding, analyzed 19-APR-18, out of holding 19-APR-18
1204011853 (B3HT51PS)	Chloride and Nitrate	Received 18-APR-18, within holding, analyzed 19-APR-18, out of holding 19-APR-18

Sample Dilutions
The following samples 1204011852 (B3HT51DUP), 1204011853 (B3HT51PS), 448316005 (B3HT51), 448316006 (B3HVC9), 448316007 (B3HVF1) and 448316008 (B3HV15) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	448316			
	005	006	007	008
Chloride	5X	5X	5X	10X
Nitrate	5X	5X	1X	1X
Sulfate	20X	20X	5X	10X

Miscellaneous Information

Manual Integrations
Samples 448316007 (B3HVF1) and 448316008 (B3HV15) were manually integrated to correctly position the

baseline as set in the calibration standards.

Ion Chromatography

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Holding Times
Samples (See Below) were initially analyzed within holding; however, the holding times had expired prior to reanalysis of diluted samples. The data is qualified.

Sample	Analyte	Value
1204011860 (B3HTC5DUP)	Chloride and Sulfate	Received 18-APR-18, within holding, analyzed 19-APR-18, out of holding 19-APR-18
1204011861 (B3HTC5PS)	Chloride and Sulfate	Received 18-APR-18, within holding, analyzed 19-APR-18, out of holding 19-APR-18
448316001 (B3HTC5)	Chloride and Sulfate	Received 18-APR-18, within holding, analyzed 19-APR-18, out of holding 19-APR-18
448316002 (B3HTF2)	Chloride and Sulfate	Received 18-APR-18, within holding, analyzed 19-APR-18, out of holding 19-APR-18
448316003 (B3HTF8)	Sulfate	Received 18-APR-18, within holding, analyzed 19-APR-18, out of holding 19-APR-18
448316004 (B3HT38)	Sulfate	Received 18-APR-18, within holding, analyzed 19-APR-18, out of holding 19-APR-18

Sample Dilutions
The following samples 1204011860 (B3HTC5DUP), 1204011861 (B3HTC5PS), 448316001 (B3HTC5), 448316002 (B3HTF2), 448316003 (B3HTF8) and 448316004 (B3HT38) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	448316			
	001	002	003	004
Chloride	10X	10X	2X	2X
Nitrate	2X	1X	2X	2X
Sulfate	10X	10X	20X	20X

Miscellaneous Information

Manual Integrations
Samples 1204011860 (B3HTC5DUP), 1204011861 (B3HTC5PS), 448316001 (B3HTC5), 448316002 (B3HTF2), 448316003 (B3HTF8) and 448316004 (B3HT38) were manually integrated to correctly position the baseline as set in the calibration standards.

Alkalinity

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Radiochemistry

I129LL_SEP_LEPS_GS: COMMON (low level)

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

SRISO_SEP_PRECIP_GPC: COMMON

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

TRITIUM_DIST_LSC: COMMON

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Miscellaneous Information

Additional Comments
The matrix spike, 1204015855 (Non SDG 448639029MS), aliquot was reduced to conserve sample volume.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Chain of Custody and Supporting Documentation

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 448316	C.O.C. # S18-004-168 Page 1 of 1

Collector: Jeff Lucas /CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S18-004	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: SURV, APRIL 2018	**Logbook No.:** HNF-N-506 - 98175	**Ice Chest No.:** GWS-582
Shipped To (Lab): GEL Laboratories, LLC	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 7720193333750
Protocol CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 9314

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HTC5	N	W	4-17-18	0804	1x125-mL G/P	9056_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By: Jeff Lucas /CHPRC — APR 17 2018 0930 (Print First and Last Name / Signature / Date/Time)	Received By: Troy Bacon CHPRC — APR 17 2018 0930 (Print First and Last Name / Signature / Date/Time)	Matrix *
Relinquished By: Troy Bacon CHPRC — APR 17 2018 1400 (Print First and Last Name / Signature / Date/Time)	Received By: FEDEX (Print First and Last Name / Signature / Date/Time)	S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air; DS = Drum Solids, DL = Drum Liquid, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, X = Other
Relinquished By: Fed Ex (Print First and Last Name / Signature / Date/Time)	Received By: Chakeris Tarplin GEL Laboratories — 4/18/18 840 (Print First and Last Name / Signature / Date/Time)	
Relinquished By: (Print First and Last Name / Signature / Date/Time)	Received By: (Print First and Last Name / Signature / Date/Time)	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 2/22/2018 — FSR ID = FSR58102 — A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 448316	C.O.C. # S18-004-174 Page 1 of 1

Collector: Jeff Lucas /CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S18-004	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: SURV, APRIL 2018	**Logbook No.:** HNF-N-506-98175	**Ice Chest No.:** GWS-582
Shipped To (Lab): GEL Laboratories, LLC	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 7720193333750
Protocol CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 9314

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HTF2	N	W	4-17-18	0828	1x125-mL G/P	9056_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By	Print First and Last Name	Signature	Date/Time	Received By	Print First and Last Name	Signature	Date/Time
	Jeff Lucas /CHPRC	J Lucas	APR 17 2018 0930		Troy Bacon CHPRC	Troy L. Bacon	APR 17 2018 0930
	Troy Bacon CHPRC	Troy L. Bacon	APR 17 2018 1400		FEDEX		
	Fed Ex				Chakeris Tarplin GEL Laboratories	Chakeris Tarplin	4/18/18 810

Matrix *

S	= Soil	DS	= Drum Solids
SE	= Sediment	DL	= Drum Liquid
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wipe
W	= Water	L	= Liquid
O	= Oil	V	= Vegetation
A	= Air	X	= Other

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 2/22/2018 FSR ID = FSR58104 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 448316	C.O.C. # S18-004-176 Page 1 of 1

Collector:	Jeff Lucas /CHPRC	**Contact/Requester:**	Karen Waters-Husted	**Telephone No.:**	509-376-4650
SAF No.:	S18-004	**Sampling Origin:**	Hanford Site	**Purchase Order/Charge Code:**	300071
Project Title:	SURV, APRIL 2018	**Logbook No.:**	HNF-N-506-98175	**Ice Chest No.:**	GWS-582
Shipped To (Lab):	GEL Laboratories, LLC	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.:**	771201933337509314
Protocol	CERCLA	**Priority:**	30 Days	**Offsite Property No.:**	

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HTF8	N	W	4-17-18	0840	1x125-mL G/P	9056_ANIONS_IC: COMMON	48 Hours	Cool <=6C

	Relinquished By	Received By
Print First and Last Name	Jeff Lucas /CHPRC	Troy Bacon CHPRC
Signature	Jeff Lucas	Troy L. Bacon
Date/Time	APR 17 2018 0930	APR 17 2018 0930
Print First and Last Name	Troy Bacon CHPRC	FEDEX
Signature	Troy L. Bacon	
Date/Time	APR 17 2018 1400	
Print First and Last Name	Fed Ex	Chakeris Tarplin GEL Laboratories
Signature		Chakeris Tarplin
Date/Time		4/18/18 840
Print First and Last Name		
Signature		
Date/Time		

Matrix *

S = Soil	DS = Drum Solids
SE = Sediment	DL = Drum Liquid
SO = Solid	T = Tissue
SL = Sludge	WI = Wipe
W = Water	L = Liquid
O = Oil	V = Vegetation
A = Air	X = Other

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 2/22/2018 FSR ID = FSR58105 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 448316	C.O.C. # S18-004-180 Page 1 of 1

Collector: Jeff Lucas /CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S18-004	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: SURV, APRIL 2018	**Logbook No.:** HNF-N-506 - 98175	**Ice Chest No.:** GWS-582
Shipped To (Lab): GEL Laboratories, LLC	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 777201993 3750
Protocol CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 9314

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HT38	N	W	4-17-18	0900	1x125-mL G/P	9056_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By	Received By	Matrix *
Jeff Lucas /CHPRC — APR 17 2018 0930 (Print First and Last Name / Signature / Date/Time)	Troy Bacon CHPRC — APR 17 2018 0930 (Print First and Last Name / Signature / Date/Time)	S = Soil; SE = Sediment; SO = Solid; SL = Sludge; W = Water; O = Oil; A = Air; DS = Drum Solids; DL = Drum Liquid; T = Tissue; WI = Wipe; L = Liquid; V = Vegetation; X = Other
Troy Bacon CHPRC — APR 17 2018 1400 (Print First and Last Name / Signature / Date/Time)	Received By: FEDEX (Print First and Last Name / Signature / Date/Time)	
Relinquished By: Fed Ex (Print First and Last Name / Signature / Date/Time)	Received By: Chakeris Tarplin GEL Laboratories — 4/18/18 840 (Print First and Last Name / Signature / Date/Time)	
Relinquished By: (Print First and Last Name / Signature / Date/Time)	Received By: (Print First and Last Name / Signature / Date/Time)	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 2/22/2018 FSR ID = FSR58093 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 448316	C.O.C. # S18-004-184 Page 1 of 1

Collector:	Larry Rosane /CHPRC	**Contact/Requester:**	Karen Waters-Husted	**Telephone No.:**	509-376-4650
SAF No.:	S18-004	**Sampling Origin:**	Hanford Site	**Purchase Order/Charge Code:**	300071
Project Title:	SURV, APRIL 2018	**Logbook No.:**	HNF-N-506 97/84	**Ice Chest No.:**	GWS-582
Shipped To (Lab):	GEL Laboratories, LLC	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.:**	7720193333750
Protocol	CERCLA	**Priority:**	30 Days	**Offsite Property No.:**	9314

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HT51	N	W	4-17-18	0915	1x125-mL G/P	9056_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By: Larry Rosane /CHPRC	Larry Rosane	APR 17 2018 1040	Received By: Troy Bacon /CHPRC	Troy L. Bacon	APR 17 2018 1040
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*
Relinquished By: Troy Bacon /CHPRC	Troy L. Bacon	APR 17 2018 1440	Received By: FEDEX		
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*
Relinquished By: Fed Ex			Received By: Chakeris Tarplin GEL Laboratories	Chakeris Tarplin	4/18/18 840
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*
Relinquished By:			Received By:		
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*

Matrix *

S	= Soil	DS	= Drum Solids
SE	= Sediment	DL	= Drum Liquid
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wipe
W	= Water	L	= Liquid
O	= Oil	V	= Vegetation
A	= Air	X	= Other

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 2/22/2018 FSR ID = FSR58107 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 4418316	C.O.C. # S18-004-208 Page 1 of 1

Collector: Larry Rosane /CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S18-004	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: SURV, APRIL 2018	**Logbook No.:** HNF-N-506 97/84	**Ice Chest No.:** GWS-582
Shipped To (Lab): GEL Laboratories, LLC	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 7020 1933 3750
Protocol CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 9314

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HVC9	N	W	4-17-18	0849	1x125-mL G/P	9056_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By: Larry Rosane /CHPRC — Larry Rosane — APR 17 2018 1040	Received By: Troy Bacon /CHPRC — Troy L. Bacon — APR 17 2018 1040	Matrix *	
Relinquished By: Troy Bacon /CHPRC — Troy L. Bacon — APR 17 2018 1440	Received By: FEDEX	S = Soil	DS = Drum Solids
Relinquished By: Fed Ex	Received By: Chakeris Tarplin GEL Laboratories — Chakeris Tarplin — 4/18/18 840	SE = Sediment	DL = Drum Liquid
Relinquished By:	Received By:	SO = Solid	T = Tissue
		SL = Sludge	WI = Wipe
		W = Water	L = Liquid
		O = Oil	V = Vegetation
		A = Air	X = Other

Print First and Last Name / Signature / Date/Time

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 2/22/2018 FSR ID = FSR58115 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 448316	C.O.C. # S18-004-212 Page 1 of 1

Collector: Daniel Klug CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S18-004	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: SURV, APRIL 2018	**Logbook No.:** HNF-N-506 -99-30	**Ice Chest No.:** GWS-582
Shipped To (Lab): GEL Laboratories, LLC	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 7720193333750
Protocol CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 9314

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HVF1	N	W	4-17-18	0847	1x125-mL G/P	9056_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By: Daniel Klug CHPRC D.K. APR 17 2018 1045	Received By: Roger Friesz Jr. /CHPRC APR 17 2018 1045	Matrix *
Print First and Last Name / Signature / Date/Time	Print First and Last Name / Signature / Date/Time	S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air; DS = Drum Solids, DL = Drum Liquid, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, X = Other
Relinquished By: Roger Friesz Jr. /CHPRC APR 17 2018 1400	Received By: FEDEX	
Print First and Last Name / Signature / Date/Time	Print First and Last Name / Signature / Date/Time	
Relinquished By: Fed Ex	Received By Chakeris Tarplin GEL Laboratories 4/18/18 840	
Print First and Last Name / Signature / Date/Time	Print First and Last Name / Signature / Date/Time	
Relinquished By:	Received By:	
Print First and Last Name / Signature / Date/Time	Print First and Last Name / Signature / Date/Time	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 2/22/2018 FSR ID = FSR58096 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 4/18/16	C.O.C. # S18-004-226 Page 1 of 1

Collector: Daniel Klug CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S18-004	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: SURV, APRIL 2018	**Logbook No.:** HNF-N-506 -99-30	**Ice Chest No.:** GWS -582
Shipped To (Lab): GEL Laboratories, LLC	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 7720193337 50
Protocol CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 9314

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HV15	N	W	4-17-18	0932	1x125-mL G/P	9056_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By: Daniel Klug CHPRC D. Klug	APR 17 2018 1045	Received By: Roger Friesz Jr. /CHPRC	APR 17 2018 1045
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*
Relinquished By: Roger Friesz Jr. /CHPRC	APR 17 2018 1400	Received By: FEDEX	
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*
Relinquished By: Fed Ex		Received By: Chakeris Tarplin GEL Laboratories	4/18/18 840
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*
Relinquished By:		Received By:	
Print First and Last Name	*Signature*	*Date/Time*	*Print First and Last Name*	*Signature*	*Date/Time*

Matrix *

S = Soil		DS = Drum Solids	
SE = Sediment		DL = Drum Liquid	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 2/22/2018 FSR ID = FSR58120 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 448316	C.O.C. # S18-004-089 Page 1 of 1

Collector: Jeff Lucas /CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S18-004	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: SURV, APRIL 2018	**Logbook No.:** HNF-N-506 -98/75	**Ice Chest No.:** GWS-582
Shipped To (Lab): GEL Laboratories, LLC	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 772019333750
Protocol CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 9314

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HTC7	Y	W	4-17-18	0804	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3HTC4	N	W	4-17-18	0804	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2

Relinquished By	Print First and Last Name	Signature	Date/Time	Received By	Print First and Last Name	Signature	Date/Time
Jeff Lucas /CHPRC	Jeff Lucas	Jeff Lucas	APR 17 2018 0930	Troy Bacon CHPRC	Troy L. Bacon	Troy L. Bacon	APR 17 2018 0930
Troy Bacon CHPRC	Troy L. Bacon	Troy L. Bacon	APR 17 2018 1400	FEDEX			
Fed Ex				Chakeris Tarplin GEL Laboratories	Chakeris Tarplin	Chakeris Tarplin	4/18/18 840

Matrix *

S = Soil		DS = Drum Solids	
SE = Sediment		DL = Drum Liquid	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 2/22/2018 FSR ID = FSR58102 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 448316	C.O.C. # S18-004-090 Page 1 of 1

Collector: Jeff Lucas /CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S18-004	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: SURV, APRIL 2018	**Logbook No.:** HNF-N-506-98175	**Ice Chest No.:** GWS-582
Shipped To (Lab): GEL Laboratories, LLC	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 7720 1933 3750
Protocol CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 9314

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HTD0	N	W	4-17-18	0700	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3HTD6	Y	W	4-17-18	0700	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2

	Print First and Last Name	Signature	Date/Time
Relinquished By:	Jeff Lucas /CHPRC		APR 17 2018 0930
Received By:	Troy Bacon CHPRC		APR 17 2018 0930
Relinquished By:	Troy Bacon CHPRC		APR 17 2018 1400
Received By:	FEDEX		
Relinquished By:	Fed Ex		
Received By:	Chakeris Tarplin GEL Laboratories		4/18/18 840
Relinquished By:			
Received By:			

Matrix *
S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air, DS = Drum Solids, DL = Drum Liquid, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, X = Other

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 2/22/2018 FSR ID = FSR58146 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 448316	C.O.C. # S18-004-091 Page 1 of 1

Collector: Jeff Lucas /CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S18-004	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: SURV, APRIL 2018	**Logbook No.:** HNF-N-506 -98/75	**Ice Chest No.:** GWS-582
Shipped To (Lab): GEL Laboratories, LLC	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 777201933 3750
Protocol CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 9314

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HTD1	N	W	4-17-18	0816	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3HTD7	Y	W	4-17-18	0816	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2

Relinquished By / Print First and Last Name	Signature	Date/Time	Received By / Print First and Last Name	Signature	Date/Time
Jeff Lucas /CHPRC	Jeff Lucas	APR 17 2018 0930	Troy Bacon CHPRC	Troy L. Bacon	APR 17 2018 0930
Troy Bacon CHPRC	Troy L. Bacon	APR 17 2018 1400	FEDEX		
Fed Ex			Chakeris Tarplin GEL Laboratories	Chakeris Tarplin	4/18/18 840

Matrix *

S = Soil		DS = Drum Solids	
SE = Sediment		DL = Drum Liquid	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 2/22/2018 FSR ID = FSR58103 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 448316	C.O.C. # S18-004-093 Page 1 of 1

Collector: Larry Rosana /CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S18-004	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: SURV, APRIL 2018	**Logbook No.:** HNF-N-506 97/84	**Ice Chest No.:** GWS-582
Shipped To (Lab): GEL Laboratories, LLC	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 772019333750
Protocol CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 9314

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HT59	Y	W	4-17-18	0927	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3HT56	N	W	4-17-18	0927	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2

	Print First and Last Name	Signature	Date/Time
Relinquished By: Larry Rosana /CHPRC	Larry Rosana		APR 17 2018 1040
Received By: Troy Bacon /CHPRC	Troy L Bacon		APR 17 2018 1040
Relinquished By: Troy Bacon /CHPRC	Troy L Bacon		APR 17 2018 1400
Received By: FEDEX			
Relinquished By: Fed Ex			
Received By: Chakeris Tarpley GEL Laboratories	Chakeris Tarpley		4/18/18 840
Relinquished By:			
Received By:			

Matrix *

S = Soil	DS = Drum Solids
SE = Sediment	DL = Drum Liquid
SO = Solid	T = Tissue
SL = Sludge	WI = Wipe
W = Water	L = Liquid
O = Oil	V = Vegetation
A = Air	X = Other

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 2/22/2018 FSR ID = FSR58108 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 448316	C.O.C. # S18-004-099 Page 1 of 1

Collector: Larry Rosane /CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S18-004	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: SURV, APRIL 2018	**Logbook No.:** HNF-N-506 97/84	**Ice Chest No.:** GWS-582
Shipped To (Lab): GEL Laboratories, LLC	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 7720 193337750
Protocol CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 9314

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HTP1	N	W	4-17-18	0818	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3HTP1	N	W	↓	↓	1x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2
B3HTP4	Y	W	4-17-18	0818	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2

Relinquished By	Received By	Matrix *
Larry Rosane /CHPRC — Larry Rosane — APR 17 2018 1040 (Print First and Last Name / Signature / Date/Time)	Troy Bacon /CHPRC — Troy L Bacon — APR 17 2018 1040	S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air; DS = Drum Solids, DL = Drum Liquid, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, X = Other
Relinquished By: Troy Bacon /CHPRC — Troy L Bacon — APR 17 2018 1400	Received By: FEDEX	
Relinquished By: Fed EX	Received By: Chakeris Tarplin GEL Laboratories — Chakeris Tarplin — 4/18/18 840	
Relinquished By:	Received By:	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 2/22/2018 FSR ID = FSR58112 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 448316	C.O.C. # S18-004-101 Page 1 of 1

Collector: Larry Rosane /CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S18-004	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: SURV, APRIL 2018	**Logbook No.:** HNF-N-506 97/84	**Ice Chest No.:** GWS-582
Shipped To (Lab): GEL Laboratories, LLC	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 7720 1933 3750
Protocol CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 9314

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HVD1	Y	W	4-17-18	0849	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3HVC8	N	W	4-17-18	0849	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2

Relinquished By / Print First and Last Name	Signature	Date/Time	Received By / Print First and Last Name	Signature	Date/Time
Larry Rosane /CHPRC	Larry Rosane	APR 17 2018 1040	Troy Bacon /CHPRC	Troy L Bacon	APR 17 2018 1040
Troy Bacon /CHPRC	Troy L Bac	APR 17 2018 1400	FEDEX		
Fed Ex			Chakeris Tarplin GEL Laboratories	Chaki Tarp	4/18/18 840

Matrix *

S = Soil		DS = Drum Solids	
SE = Sediment		DL = Drum Liquid	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 2/22/2018 FSR ID = FSR58115 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 448316	C.O.C. # S18-004-102 Page 1 of 1

Collector: Daniel Klug CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S18-004	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: SURV, APRIL 2018	**Logbook No.:** HNF-N-506 49-30	**Ice Chest No.:** GWS-582
Shipped To (Lab): GEL Laboratories, LLC	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 7720193337 50
Protocol CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 9314

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HVF9	Y	W	4-17-18	0835	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3HVF6	N	W	4-17-18	0835	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2

1045

Relinquished By / Print First and Last Name	Signature	Date/Time	Received By / Print First and Last Name	Signature	Date/Time
Daniel Klug CHPRC	D.K	APR 17 2018	Roger Friesz Jr. /CHPRC		APR 17 2018 1045
Roger Friesz Jr. CHPRC		APR 17 2018 1400	FEDEX		
Fed Ex			Chakeris Tarplin, GEL Laboratories	Chakeris Tarplin	4/18/18 840

Matrix *

S = Soil		DS = Drum Solids	
SE = Sediment		DL = Drum Liquid	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 2/22/2018 FSR ID = FSR58117 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 448316	C.O.C. # S18-004-105 Page 1 of 1

Collector: Daniel Klug CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S18-004	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: SURV, APRIL 2018	**Logbook No.:** HNF-N-506-99-30	**Ice Chest No.:** GWS-582
Shipped To (Lab): GEL Laboratories, LLC	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 7720 1933 3750
Protocol CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 9314

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HV20	N	W	4-17-18	0950	1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C
B3HV20	N	W	4-17-18	0950	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3HV26	Y	W	4-17-18	0950	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2

Relinquished By / Print First and Last Name	Signature	Date/Time	Received By / Print First and Last Name	Signature	Date/Time
Daniel Klug CHPRC	D.K	APR 17 2018 1045	Roger Friesz Jr. /CHPRC		APR 17 2018 1045
Roger Friesz Jr. /CHPRC		APR 17 2018 1400	FEDEX		
Fed Ex			Chakeris Tarplin GEL Laboratories		4/18/18 840

Matrix *

S = Soil		DS = Drum Solids	
SE = Sediment		DL = Drum Liquid	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 2/22/2018 FSR ID = FSR58121 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 448316	C.O.C. # S18-004-106 Page 1 of 1

Collector: Daniel Klug CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S18-004	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: SURV, APRIL 2018	**Logbook No.:** HNF-N-506-99-30	**Ice Chest No.:** GWS-582
Shipped To (Lab): GEL Laboratories, LLC	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 772019333750
Protocol CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 9314

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HV21	N	W	4-17-18	0950	1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C
B3HV21	N	W	4-17-18	0950	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3HV27	Y	W	4-17-18	0950	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2

Relinquished By / Print First and Last Name	Signature	Date/Time	Received By / Print First and Last Name	Signature	Date/Time
Daniel Klug CHPRC	D. Klug	APR 17 2018 1045	Roger Friesz Jr. /CHPRC		APR 17 2018 1045
Roger Friesz Jr. /CHPRC		APR 17 2018 1400	FEDEX		
Fed Ex			Chakeris Tarplin GEL Laboratories		4/18/18 840

Matrix *

S = Soil		DS = Drum Solids	
SE = Sediment		DL = Drum Liquid	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 2/22/2018 FSR ID = FSR58121 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 448316	C.O.C. # S18-004-131 Page 1 of 1

Collector: Larry Rosane /CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S18-004	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: SURV, APRIL 2018	**Logbook No.:** HNF-N-506 97/83	**Ice Chest No.:** GWS-582
Shipped To (Lab): GEL Laboratories, LLC	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 7720 1933 3750
Protocol CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 9314

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HTW4	N	W	4-12-18	1040	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None

Relinquished By	Signature	Date/Time	Received By	Signature	Date/Time
Larry Rosane /CHPRC	Larry Rosane	APR 12 2018 1400	FEDEX SSOH		APR 12 2018 1400
Roger Friesz Jr. /CHPRC	SSU-11-NSS	APR 17 2018 1100 RLO 4/17/18 1400	FEDEX		RLO 4/17/18 Roger Friesz Jr. /CHPRC APR 17 2018 1100
Roger Friesz Jr. /CHPRC		APR 17 2018 1400	FEDEX		
Fed Ex			Chakeris Tarplin GEL Laboratories	Chakeris Tarplin	4/18/18 840

RLO 4/17/18 APR 17 2018 924-12-18 924-12-18

Matrix *

S	= Soil	DS	= Drum Solids
SE	= Sediment	DL	= Drum Liquid
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wipe
W	= Water	L	= Liquid
O	= Oil	V	= Vegetation
A	= Air	X	= Other

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 3/8/2018 FSR ID = FSR58662 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 448316	C.O.C. # S18-004-397 Page 1 of 1

Collector: Mike Esparza /CHPRC, Daniel Klug CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: S18-004	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: SURV, APRIL 2018	**Logbook No.:** HNF-N-506-95-30	**Ice Chest No.:** GWS-582
Shipped To (Lab): GEL Laboratories, LLC	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 7720193337 56
Protocol CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 9314

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HWN5	N	W	4-17-18	0932	1x250-mL P	TRITIUM_DIST_LSC: COMMON	6 Months	None

Relinquished By: Daniel Klug CHPRC	Signature: D Klug	Date/Time: APR 17 2018 1045	Received By: Roger Friesz Jr. /CHPRC — Signature — APR 17 2018 1045
Relinquished By: Roger Friesz Jr. /CHPRC	Signature	APR 17 2018 1400	Received By: FEDEX
Relinquished By: Fed Ex			Received By: Chakeris Tarplin GEL Laboratories — Signature — 4/18/18 840
Relinquished By:			Received By:

Matrix *

S = Soil		DS = Drum Solids	
SE = Sediment		DL = Drum Liquid	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 2/22/2018 — FSR ID = FSR58120 — A-6004-842 (REV 3)

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: CPRC	**SDG/AR/COC/Work Order:** 448316
Received By: C. Tarplin	**Date Received:** Apr 18, 2018
Carrier and Tracking Number	Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other 7724 1933 9750

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
Shipped as a DOT Hazardous?		X	Hazard Class Shipped: UN#:
COC/Samples marked or classified as radioactive?	X		Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0 CPM / mR/Hr **Classified as:** Rad 1 **Rad 2** **Rad 3**
Is package, COC, and/or Samples marked HAZ?		X	If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	X			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	X			
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	X			Preservation Method: Wet Ice Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius **TEMP:** 1°C
4	Daily check performed and passed on IR temperature gun?	X			**Temperature Device Serial #:** IR4-17 Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	X			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?	X			Sample ID's and Containers Affected: If Preservation added, Lot#:
7	Do any samples require Volatile Analysis?			X	If Yes, Are Encores or Soil Kits present? Yes___ No___ (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes No___ N/A___ (If unknown, select No) VOA vials free of headspace? Yes___ No___ N/A___ Sample ID's and containers affected:
8	Samples received within holding time?	X			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	X			Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?	X			Sample ID's affected:
11	Number of containers received match number indicated on COC?	X			Sample ID's affected:
12	Are sample containers identifiable as GEL provided?			X	
13	COC form is properly signed in relinquished/received sections?	X			

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials AS Date 4/19/18 Page 1 of 1

GL-CHL-SR-001 Rev 5

Data Review Qualifier Definitions

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 (843) 556−8171

Report Date: 14−MAY−18

Project Specific Qualifier Definitions for GEL Client Code: CPRC

Qualifier	Qualifier Definition	Department	Fraction
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.		
J	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).Value is estimated	Organics	
P	Aroclor target analyte with greater than 25% difference between column analyses.	Organics	
C	Analyte has been confirmed by GC/MS analysis	Organics	Pesticide
B	The analyte was detected in both the associated QC blank and in the sample.	Organics	
E	Concentration exceeds the calibration range of the instrument	Organics	
A	The TIC is a suspected aldol−condensation product	Organics	Semi−Volatile
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
N	Spike Sample recovery is outside control limits.		
*	Duplicate analysis not within control limits	Inorganics	
>	Result greater than quantifiable range or greater than upper limit of the analysis range	General Chemistry	
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Inorganics	Metals
D	Results are reported from a diluted aliquot of sample.		
E	Reported value is estimated due to interferences. See comment in narrative.	Inorganics	Metals
M	Duplicate precision not met.	Inorganics	Metals
o	Analyte failed to recover within LCS limits (0rganics only)	Organics	
S	Reported value determined by the Method of Standard Additions (MSA)	Inorganics	
T	Spike and/or spike duplicate sample recovery is outside control limits.	Organics	
W	Post−digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Inorganics	
B	The analyte was detected in the associated method blank >/= MDC or >5% sample activity.	Radiological	
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
+	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Inorganics	
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	General Chemistry	
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Inorganics	Metals
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.	General Chemistry	
<	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	General Chemistry	
UX	Gamma Spectroscopy−−Uncertain identification	Radiological	

Laboratory Certifications

List of current GEL Certifications as of 14 May 2018

State	Certification
Alaska	17−018
Arkansas	88−0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−15−00283, P330−15−00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA180011
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE−OS−26−13
Nevada	SC000122018−1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R−158
Oklahoma	9904
Pennsylvania NELAP	68−00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−18−13
Utah NELAP	SC000122018−26
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL448316
Work Order #: 448316

Product: **Determination of Metals by ICP**
Analytical Method: SW846 3005A/6010D
Analytical Procedure: GL-MA-E-013 REV# 30
Analytical Batch: 1756921

Product: **Determination of Metals by ICP-MS**
Analytical Method: SW846 3005A/6020B
Analytical Procedure: GL-MA-E-014 REV# 32
Analytical Batch: 1756931

Preparation Method: SW846 3005A
Preparation Procedure: GL-MA-E-006 REV# 14
Preparation Batches: 1756920 and 1756929

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
448316009	B3HTC7
448316010	B3HTC4
448316011	B3HTD0
448316012	B3HTD6
448316013	B3HTD1
448316014	B3HTD7
448316015	B3HT59
448316016	B3HT56
448316017	B3HTP1
448316018	B3HTP4
448316019	B3HVD1
448316020	B3HVC8
448316021	B3HVF9
448316022	B3HVF6
448316023	B3HV20
448316024	B3HV26
448316025	B3HV21
448316026	B3HV27
1204011923	Method Blank (MB)**ICP**
1204011924	Laboratory Control Sample (LCS)
1204011927	448316023(B3HV20L) Serial Dilution (SD)
1204011925	448316023(B3HV20S) Matrix Spike (MS)
1204011926	448316023(B3HV20SD) Matrix Spike Duplicate (MSD)
1204023006	448316023(B3HV20PS) Post Spike (PS)
1204011942	Method Blank (MB)**ICP-MS**
1204011943	Laboratory Control Sample (LCS)
1204011946	448314001(NonSDGL) Serial Dilution (SD)
1204011944	448314001(NonSDGS) Matrix Spike (MS)
1204011945	448314001(NonSDGSD) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Calibration Information

ICSA/ICSAB Statement
For the ICP-MS analysis, the ICSA solution contains analyte concentrations which are verified trace impurities indigenous to the purchased standard.

Continuing Calibration Blanks (CCB) Requirements
All continuing calibration blanks(CCB) bracketing the sample in this SDG did not meet the acceptance criteria. The samples bracketed by this CCB, however, contained sodium at a concentration at least ten times greater than the concentration in the CCB. This indicates that any contribution to the concentration of sodium in the samples from potential laboratory contamination would be minimal. 448316023 (B3HV20), 448316024 (B3HV26), 448316025 (B3HV21) and 448316026 (B3HV27)-ICP.

Quality Control (QC) Information

Method Blank (MB) Statement
The samples in this SDG contained analytes at concentrations more than ten times the amount present in the method blank, therefore the data was not adversely affected.

Sample	Analyte	Value
1204011923 (MB)	Potassium and Sodium	See applicable report

Matrix Spike (MS/MSD) Recovery Statement
The percent recoveries (%R) obtained from the MS/MSD analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The MS/MSD (See Below) did not meet the recommended quality control acceptance criteria for percent recoveries for the following applicable analyte. The post spike also did not meet the required control limits; thus, confirming matrix interferences and/or sample non-homogeneity.

Sample	Analyte	Value
1204011925 (B3HV20MS)	Sodium	73.8* (75%-125%)

Post Spike (PS) Recovery Statement
The percent recoveries (%R) obtained from the PS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The PS did not meet the recommended quality control acceptance criteria for percent recoveries for all applicable analytes and verifies the presence of matrix interferences.

Sample	Analyte	Value
1204023006 (B3HV20PS)	Sodium	57.2* (75%-125%)

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL448316 GEL Work Order: 448316

The Qualifiers in this report are defined as follows:

* Duplicate analysis not within control limits

B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).

C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.

D Results are reported from a diluted aliquot of sample.

N Spike Sample recovery is outside control limits.

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:  **Name: Nik-Cole Elmore**

Date: 14 MAY 2018 **Title: Data Validator**

Sample Data Summary

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448316 **CONTRACT:** CPRC0S18004 **METHOD TYPE:** SW846

SAMPLE ID: 448316009 **BASIS:** As Received **DATE COLLECTED** 17−APR−18

CLIENT ID: B3HTC7 **LEVEL:** Low **DATE RECEIVED** 18−APR−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−47−3	Chromium	10.3	ug/L		3	10	10	1	MS	SKJ	05/10/18 22:59	180510−3	1756931

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1756931	1756929	SW846 3005A	50	mL	50	mL	04/19/18	SXW1

***Analytical Methods:**

MS **SW846 3005A/6020B**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448316 **CONTRACT:** CPRC0S18004 **METHOD TYPE:** SW846

SAMPLE ID: 448316010 **BASIS:** As Received **DATE COLLECTED** 17−APR−18

CLIENT ID: B3HTC4 **LEVEL:** Low **DATE RECEIVED** 18−APR−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−47−3	Chromium	10.2	ug/L		3	10	10	1	MS	SKJ	05/10/18 23:03	180510−3	1756931

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1756931	1756929	SW846 3005A	50	mL	50	mL	04/19/18	SXW1

***Analytical Methods:**

MS **SW846 3005A/6020B**

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448316 **CONTRACT:** CPRC0S18004 **METHOD TYPE:** SW846

SAMPLE ID: 448316011 **BASIS:** As Received **DATE COLLECTED** 17−APR−18

CLIENT ID: B3HTD0 **LEVEL:** Low **DATE RECEIVED** 18−APR−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−47−3	Chromium	3	ug/L	U	3	10	10	1	MS	SKJ	05/10/18 23:07	180510−3	1756931

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1756931	1756929	SW846 3005A	50	mL	50	mL	04/19/18	SXW1

***Analytical Methods:**

MS **SW846 3005A/6020B**

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448316 **CONTRACT:** CPRC0S18004 **METHOD TYPE:** SW846

SAMPLE ID: 448316012 **BASIS:** As Received **DATE COLLECTED** 17−APR−18

CLIENT ID: B3HTD6 **LEVEL:** Low **DATE RECEIVED** 18−APR−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−47−3	Chromium	3	ug/L	U	3	10	10	1	MS	SKJ	05/10/18 23:10	180510−3	1756931

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1756931	1756929	SW846 3005A	50	mL	50	mL	04/19/18	SXW1

***Analytical Methods:**

MS **SW846 3005A/6020B**

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448316 **CONTRACT:** CPRC0S18004 **METHOD TYPE:** SW846

SAMPLE ID: 448316013 **BASIS:** As Received **DATE COLLECTED** 17−APR−18

CLIENT ID: B3HTD1 **LEVEL:** Low **DATE RECEIVED** 18−APR−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−47−3	Chromium	25.8	ug/L		3	10	10	1	MS	SKJ	05/10/18 23:14	180510−3	1756931

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1756931	1756929	SW846 3005A	50	mL	50	mL	04/19/18	SXW1

***Analytical Methods:**

MS **SW846 3005A/6020B**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448316 **CONTRACT:** CPRC0S18004 **METHOD TYPE:** SW846

SAMPLE ID: 448316014 **BASIS:** As Received **DATE COLLECTED** 17−APR−18

CLIENT ID: B3HTD7 **LEVEL:** Low **DATE RECEIVED** 18−APR−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−47−3	Chromium	25.6	ug/L		3	10	10	1	MS	SKJ	05/10/18 23:26	180510−3	1756931

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1756931	1756929	SW846 3005A	50	mL	50	mL	04/19/18	SXW1

***Analytical Methods:**

MS **SW846 3005A/6020B**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448316 **CONTRACT:** CPRC0S18004 **METHOD TYPE:** SW846

SAMPLE ID: 448316015 **BASIS:** As Received **DATE COLLECTED** 17−APR−18

CLIENT ID: B3HT59 **LEVEL:** Low **DATE RECEIVED** 18−APR−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−47−3	Chromium	16.1	ug/L		3	10	10	1	MS	SKJ	05/10/18 23:30	180510−3	1756931

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1756931	1756929	SW846 3005A	50	mL	50	mL	04/19/18	SXW1

***Analytical Methods:**

MS **SW846 3005A/6020B**

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448316 **CONTRACT:** CPRC0S18004 **METHOD TYPE:** SW846

SAMPLE ID: 448316016 **BASIS:** As Received **DATE COLLECTED** 17−APR−18

CLIENT ID: B3HT56 **LEVEL:** Low **DATE RECEIVED** 18−APR−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−47−3	Chromium	17.5	ug/L		3	10	10	1	MS	SKJ	05/10/18 23:34	180510−3	1756931

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1756931	1756929	SW846 3005A	50	mL	50	mL	04/19/18	SXW1

***Analytical Methods:**

MS **SW846 3005A/6020B**

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448316 **CONTRACT:** CPRC0S18004 **METHOD TYPE:** SW846

SAMPLE ID: 448316017 **BASIS:** As Received **DATE COLLECTED** 17−APR−18

CLIENT ID: B3HTP1 **LEVEL:** Low **DATE RECEIVED** 18−APR−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−47−3	Chromium	15.4	ug/L		3	10	10	1	MS	SKJ	05/10/18 23:38	180510−3	1756931

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1756931	1756929	SW846 3005A	50	mL	50	mL	04/19/18	SXW1

***Analytical Methods:**

MS **SW846 3005A/6020B**

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448316 **CONTRACT:** CPRC0S18004 **METHOD TYPE:** SW846

SAMPLE ID: 448316018 **BASIS:** As Received **DATE COLLECTED** 17−APR−18

CLIENT ID: B3HTP4 **LEVEL:** Low **DATE RECEIVED** 18−APR−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−47−3	Chromium	14.9	ug/L		3	10	10	1	MS	SKJ	05/10/18 23:42	180510−3	1756931

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1756931	1756929	SW846 3005A	50	mL	50	mL	04/19/18	SXW1

***Analytical Methods:**

MS **SW846 3005A/6020B**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448316 **CONTRACT:** CPRC0S18004 **METHOD TYPE:** SW846

SAMPLE ID: 448316019 **BASIS:** As Received **DATE COLLECTED** 17−APR−18

CLIENT ID: B3HVD1 **LEVEL:** Low **DATE RECEIVED** 18−APR−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−47−3	Chromium	23.4	ug/L		3	10	10	1	MS	SKJ	05/10/18 23:46	180510−3	1756931

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1756931	1756929	SW846 3005A	50	mL	50	mL	04/19/18	SXW1

***Analytical Methods:**

MS **SW846 3005A/6020B**

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448316 **CONTRACT:** CPRC0S18004 **METHOD TYPE:** SW846

SAMPLE ID: 448316020 **BASIS:** As Received **DATE COLLECTED** 17−APR−18

CLIENT ID: B3HVC8 **LEVEL:** Low **DATE RECEIVED** 18−APR−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−47−3	Chromium	24.9	ug/L		3	10	10	1	MS	SKJ	05/10/18 23:58	180510−3	1756931

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1756931	1756929	SW846 3005A	50	mL	50	mL	04/19/18	SXW1

***Analytical Methods:**

MS **SW846 3005A/6020B**

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448316 **CONTRACT:** CPRC0S18004 **METHOD TYPE:** SW846

SAMPLE ID: 448316021 **BASIS:** As Received **DATE COLLECTED** 17−APR−18

CLIENT ID: B3HVF9 **LEVEL:** Low **DATE RECEIVED** 18−APR−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−47−3	Chromium	30.6	ug/L		3	10	10	1	MS	SKJ	05/11/18 00:02	180510−3	1756931

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1756931	1756929	SW846 3005A	50	mL	50	mL	04/19/18	SXW1

***Analytical Methods:**

MS **SW846 3005A/6020B**

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448316 **CONTRACT:** CPRC0S18004 **METHOD TYPE:** SW846

SAMPLE ID: 448316022 **BASIS:** As Received **DATE COLLECTED** 17−APR−18

CLIENT ID: B3HVF6 **LEVEL:** Low **DATE RECEIVED** 18−APR−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−47−3	Chromium	30.7	ug/L		3	10	10	1	MS	SKJ	05/11/18 00:06	180510−3	1756931

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1756931	1756929	SW846 3005A	50	mL	50	mL	04/19/18	SXW1

***Analytical Methods:**

MS **SW846 3005A/6020B**

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448316 **CONTRACT:** CPRC0S18004 **METHOD TYPE:** SW846

SAMPLE ID: 448316023 **BASIS:** As Received **DATE COLLECTED** 17−APR−18

CLIENT ID: B3HV20 **LEVEL:** Low **DATE RECEIVED** 18−APR−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−42−8	Boron	15.3	ug/L	B	15	50	50	1	P	JWJ	05/01/18 19:51	050118−1	1756921
7440−70−2	Calcium	51800	ug/L		50	200	200	1	P	JWJ	05/01/18 19:51	050118−1	1756921
7440−47−3	Chromium	11	ug/L		3	10	10	1	MS	SKJ	05/11/18 00:10	180510−3	1756931
7439−89−6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	05/01/18 19:51	050118−1	1756921
7439−95−4	Magnesium	15500	ug/L		110	300	300	1	P	JWJ	05/01/18 19:51	050118−1	1756921
7440−09−7	Potassium	5570	ug/L		50	150	150	1	P	JWJ	05/01/18 19:51	050118−1	1756921
7440−23−5	Sodium	20000	ug/L	N	100	300	300	1	P	JWJ	05/01/18 19:51	050118−1	1756921
7440−62−2	Vanadium	8.1	ug/L		1	5	5	1	P	JWJ	05/01/18 19:51	050118−1	1756921

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1756921	1756920	SW846 3005A	50	mL	50	mL	04/19/18	SXW1
1756931	1756929	SW846 3005A	50	mL	50	mL	04/19/18	SXW1

***Analytical Methods:**

P **SW846 3005A/6010D**
MS **SW846 3005A/6020B**

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448316 **CONTRACT:** CPRC0S18004 **METHOD TYPE:** SW846

SAMPLE ID: 448316024 **BASIS:** As Received **DATE COLLECTED** 17−APR−18

CLIENT ID: B3HV26 **LEVEL:** Low **DATE RECEIVED** 18−APR−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−42−8	Boron	15	ug/L	U	15	50	50	1	P	JWJ	05/01/18 20:02	050118−1	1756921
7440−70−2	Calcium	51400	ug/L		50	200	200	1	P	JWJ	05/01/18 20:02	050118−1	1756921
7440−47−3	Chromium	10.6	ug/L		3	10	10	1	MS	SKJ	05/11/18 00:14	180510−3	1756931
7439−89−6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	05/01/18 20:02	050118−1	1756921
7439−95−4	Magnesium	15400	ug/L		110	300	300	1	P	JWJ	05/01/18 20:02	050118−1	1756921
7440−09−7	Potassium	5510	ug/L		50	150	150	1	P	JWJ	05/01/18 20:02	050118−1	1756921
7440−23−5	Sodium	19700	ug/L	N	100	300	300	1	P	JWJ	05/01/18 20:02	050118−1	1756921
7440−62−2	Vanadium	8.35	ug/L		1	5	5	1	P	JWJ	05/01/18 20:02	050118−1	1756921

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1756921	1756920	SW846 3005A	50	mL	50	mL	04/19/18	SXW1
1756931	1756929	SW846 3005A	50	mL	50	mL	04/19/18	SXW1

***Analytical Methods:**

P **SW846 3005A/6010D**
MS **SW846 3005A/6020B**

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448316 **CONTRACT:** CPRC0S18004 **METHOD TYPE:** SW846

SAMPLE ID: 448316025 **BASIS:** As Received **DATE COLLECTED** 17−APR−18

CLIENT ID: B3HV21 **LEVEL:** Low **DATE RECEIVED** 18−APR−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−42−8	Boron	15	ug/L	U	15	50	50	1	P	JWJ	05/01/18 20:05	050118−1	1756921
7440−70−2	Calcium	52400	ug/L		50	200	200	1	P	JWJ	05/01/18 20:05	050118−1	1756921
7440−47−3	Chromium	10.9	ug/L		3	10	10	1	MS	SKJ	05/11/18 00:18	180510−3	1756931
7439−89−6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	05/01/18 20:05	050118−1	1756921
7439−95−4	Magnesium	15500	ug/L		110	300	300	1	P	JWJ	05/01/18 20:05	050118−1	1756921
7440−09−7	Potassium	5560	ug/L		50	150	150	1	P	JWJ	05/01/18 20:05	050118−1	1756921
7440−23−5	Sodium	19900	ug/L	N	100	300	300	1	P	JWJ	05/01/18 20:05	050118−1	1756921
7440−62−2	Vanadium	8.3	ug/L		1	5	5	1	P	JWJ	05/01/18 20:05	050118−1	1756921

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1756921	1756920	SW846 3005A	50	mL	50	mL	04/19/18	SXW1
1756931	1756929	SW846 3005A	50	mL	50	mL	04/19/18	SXW1

***Analytical Methods:**

P **SW846 3005A/6010D**
MS **SW846 3005A/6020B**

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448316 **CONTRACT:** CPRC0S18004 **METHOD TYPE:** SW846

SAMPLE ID: 448316026 **BASIS:** As Received **DATE COLLECTED** 17−APR−18

CLIENT ID: B3HV27 **LEVEL:** Low **DATE RECEIVED** 18−APR−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−42−8	Boron	15	ug/L	U	15	50	50	1	P	JWJ	05/01/18 20:09	050118−1	1756921
7440−70−2	Calcium	51700	ug/L		50	200	200	1	P	JWJ	05/01/18 20:09	050118−1	1756921
7440−47−3	Chromium	11.8	ug/L		3	10	10	1	MS	SKJ	05/11/18 00:21	180510−3	1756931
7439−89−6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	05/01/18 20:09	050118−1	1756921
7439−95−4	Magnesium	15300	ug/L		110	300	300	1	P	JWJ	05/01/18 20:09	050118−1	1756921
7440−09−7	Potassium	5520	ug/L		50	150	150	1	P	JWJ	05/01/18 20:09	050118−1	1756921
7440−23−5	Sodium	19600	ug/L	N	100	300	300	1	P	JWJ	05/01/18 20:09	050118−1	1756921
7440−62−2	Vanadium	8.12	ug/L		1	5	5	1	P	JWJ	05/01/18 20:09	050118−1	1756921

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1756921	1756920	SW846 3005A	50	mL	50	mL	04/19/18	SXW1
1756931	1756929	SW846 3005A	50	mL	50	mL	04/19/18	SXW1

***Analytical Methods:**

P **SW846 3005A/6010D**
MS **SW846 3005A/6020B**

Quality Control Summary

GEL LABORATORIES LLC
2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: May 14, 2018

CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington

Contact: **Mr. Scot Fitzgerald**

Workorder: **448316**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1756931										
QC1204011943 LCS										
Chromium	50.0			48.2	ug/L		96.3	(80%-120%)	SKJ	05/10/18 22:23
QC1204011942 MB										
Chromium			U	3.00	ug/L					05/10/18 22:19
QC1204011944 448314001 MS										
Chromium	50.0	19.4		70.8	ug/L		103	(75%-125%)		05/10/18 22:31
QC1204011945 448314001 MSD										
Chromium	50.0	19.4		69.0	ug/L	2.48	99.3	(0%-20%)		05/10/18 22:35
QC1204011946 448314001 SDILT										
Chromium		19.4	BD	3.44	ug/L	11.1		(0%-20%)		05/10/18 22:43
Metals Analysis-ICP										
Batch 1756921										
QC1204011924 LCS										
Boron	500			520	ug/L		104	(80%-120%)	JWJ	05/01/18 19:48
Calcium	5000			5070	ug/L		101	(80%-120%)		
Iron	5000			5210	ug/L		104	(80%-120%)		
Magnesium	5000			5160	ug/L		103	(80%-120%)		
Potassium	5000			5200	ug/L		104	(80%-120%)		
Sodium	5000			5120	ug/L		102	(80%-120%)		

GEL LABORATORIES LLC
2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: **448316**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP											
Batch 1756921											
Vanadium	500				521	ug/L		104	(80%-120%)	JWJ	05/01/18 19:48
QC1204011923 MB											
Boron				U	15.0	ug/L					05/01/18 19:45
Calcium				U	50.0	ug/L					
Iron				U	30.0	ug/L					
Magnesium				U	110	ug/L					
Potassium					75.3	ug/L					
Sodium					296	ug/L					
Vanadium				U	1.00	ug/L					
QC1204011925 448316023 MS											
Boron	500	B	15.3		538	ug/L		104	(75%-125%)		05/01/18 19:54
Calcium	5000		51800		53300	ug/L		N/A	(75%-125%)		
Iron	5000	U	30.0		5000	ug/L		99.8	(75%-125%)		
Magnesium	5000		15500		20200	ug/L		93.9	(75%-125%)		
Potassium	5000	C	5570		10400	ug/L		96.1	(75%-125%)		
Sodium	5000	CN	20000	N	23600	ug/L		73.8*	(75%-125%)		

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QC Summary

Workorder: **448316**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP											
Batch 1756921											
Vanadium	500		8.10		512	ug/L		101	(75%-125%)	JWJ	05/01/18 19:54
QC1204011926 448316023 MSD											
Boron	500	B	15.3		551	ug/L	2.37	107	(0%-20%)		05/01/18 19:56
Calcium	5000		51800		54400	ug/L	2.09	N/A	(0%-20%)		
Iron	5000	U	30.0		4940	ug/L	1.16	98.7	(0%-20%)		
Magnesium	5000		15500		20400	ug/L	0.921	97.6	(0%-20%)		
Potassium	5000	C	5570		10400	ug/L	0.346	96.8	(0%-20%)		
Sodium	5000	CN	20000		24000	ug/L	1.33	80.2	(0%-20%)		
Vanadium	500		8.10		530	ug/L	3.47	104	(0%-20%)		
QC1204023006 448316023 PS											
Sodium	5000	CN	20000		22800	ug/L		57.2 *	(75%-125%)		05/04/18 14:58
QC1204011927 448316023 SDILT											
Boron		B	15.3	DU	75.0	ug/L	N/A		(0%-20%)		05/01/18 19:59
Calcium			51800	D	10900	ug/L	5.32		(0%-20%)		
Iron		U	3.89	DU	150	ug/L	N/A		(0%-20%)		
Magnesium			15500	D	3550	ug/L	14.2		(0%-20%)		
Potassium		C	5570	D	1240	ug/L	11.2		(0%-20%)		

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QC Summary

Workorder: **448316**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP										
Batch 1756921										
Sodium	CN	20000	D	4440	ug/L	11.4		(0%-20%)	JWJ	05/01/18 19:59
Vanadium		8.10	BD	1.81	ug/L	11.6		(0%-20%)		

Notes:

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

General Chem Analysis

Case Narrative

General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL448316
Work Order #: 448316

Product: **Ion Chromatography**
Analytical Method: 9056_ANIONS_IC
Analytical Procedure: GL-GC-E-086 REV# 25
Analytical Batches: 1756886 and 1756893

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
448316001	B3HTC5
448316002	B3HTF2
448316003	B3HTF8
448316004	B3HT38
448316005	B3HT51
448316006	B3HVC9
448316007	B3HVF1
448316008	B3HV15
1204011850	Method Blank (MB)
1204011851	Laboratory Control Sample (LCS)
1204011852	448316005(B3HT51) Sample Duplicate (DUP)
1204011853	448316005(B3HT51) Post Spike (PS)
1204011858	Method Blank (MB)
1204011859	Laboratory Control Sample (LCS)
1204011860	448316001(B3HTC5) Sample Duplicate (DUP)
1204011861	448316001(B3HTC5) Post Spike (PS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Holding Times
Samples (See Below) were initially analyzed within holding; however, the holding times had expired prior to reanalysis of diluted samples. The data is qualified.

Sample	Analyte	Value
1204011852 (B3HT51DUP)	Chloride and Nitrate	Received 18-APR-18, within holding, analyzed 19-APR-18, out of holding 19-APR-18
1204011853 (B3HT51PS)	Chloride and Nitrate	Received 18-APR-18, within holding, analyzed 19-APR-18, out of holding 19-APR-18
1204011860 (B3HTC5DUP)	Chloride and Sulfate	Received 18-APR-18, within holding, analyzed 19-APR-18, out of holding 19-APR-18
1204011861 (B3HTC5PS)	Chloride and Sulfate	Received 18-APR-18, within holding, analyzed 19-APR-18, out of holding 19-APR-18
448316001 (B3HTC5)	Chloride and Sulfate	Received 18-APR-18, within holding, analyzed 19-APR-18, out of holding 19-APR-18
448316002 (B3HTF2)	Chloride and Sulfate	Received 18-APR-18, within holding, analyzed 19-APR-18, out of holding 19-APR-18
448316003 (B3HTF8)	Sulfate	Received 18-APR-18, within holding, analyzed 19-APR-18, out of holding 19-APR-18
448316004 (B3HT38)	Sulfate	Received 18-APR-18, within holding, analyzed 19-APR-18, out of holding 19-APR-18

Sample Dilutions

The following samples 1204011852 (B3HT51DUP), 1204011853 (B3HT51PS), 448316005 (B3HT51), 448316006 (B3HVC9), 448316007 (B3HVF1), 448316008 (B3HV15), 1204011860 (B3HTC5DUP), 1204011861 (B3HTC5PS), 448316001 (B3HTC5), 448316002 (B3HTF2), 448316003 (B3HTF8) and 448316004 (B3HT38) were diluted because target analyte concentrations exceeded the calibration range. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

Analyte	448316							
	001	002	003	004	005	006	007	008
Chloride	10X	10X	2X	2X	5X	5X	5X	10X
Nitrate	2X	1X	2X	2X	5X	5X	1X	1X
Sulfate	10X	10X	20X	20X	20X	20X	5X	10X

Miscellaneous Information

Manual Integrations

Samples 448316007 (B3HVF1), 448316008 (B3HV15), 1204011860 (B3HTC5DUP), 1204011861 (B3HTC5PS), 448316001 (B3HTC5), 448316002 (B3HTF2), 448316003 (B3HTF8) and 448316004 (B3HT38) were manually integrated to correctly position the baseline as set in the calibration standards.

Product: **Alkalinity**
Analytical Method: 2320_ALKALINITY
Analytical Procedure: GL-GC-E-033 REV# 13
Analytical Batch: 1757257

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
448316023	B3HV20
448316025	B3HV21
1204012750	Laboratory Control Sample (LCS)
1204012751	447585014(NonSDG) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL448316 GEL Work Order: 448316

The Qualifiers in this report are defined as follows:

B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).

D Results are reported from a diluted aliquot of sample.

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:  **Name: Aubrey Kingsbury**

Date: 02 MAY 2018 **Title: Data Validator**

Sample Data Summary

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF S18-004

Client Sample ID: B3HTC5
Sample ID: 448316001
Matrix: WATER
Collect Date: 17-APR-18 08:04
Receive Date: 18-APR-18
Collector: Client

Project: CPRC0S18004
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride	B	131	33.0	500	ug/L		1	LXA2	04/19/18	0404	1756893	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Nitrate-N	D	5990	66.0	250	ug/L		2	LXA2	04/19/18	0912	1756893	2
Chloride	D	16700	670	2000	ug/L		10	LXA2	04/19/18	1722	1756893	3
Sulfate	D	96300	1330	4000	ug/L		10					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	
3	9056_ANIONS_IC	

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF S18-004

Client Sample ID: B3HTF2
Sample ID: 448316002
Matrix: WATER
Collect Date: 17-APR-18 08:28
Receive Date: 18-APR-18
Collector: Client

Project: CPRC0S18004
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride	B	123	33.0	500	ug/L		1	LXA2	04/19/18	0534	1756893	1
Nitrate-N		3680	33.0	250	ug/L		1					
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	8810	670	2000	ug/L		10	LXA2	04/19/18	1852	1756893	2
Sulfate	D	101000	1330	4000	ug/L		10					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF S18-004

Client Sample ID: B3HTF8
Sample ID: 448316003
Matrix: WATER
Collect Date: 17-APR-18 08:40
Receive Date: 18-APR-18
Collector: Client

Project: CPRC0S18004
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride	B	173	33.0	500	ug/L		1	LXA2	04/19/18	0604	1756893	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	14200	134	400	ug/L		2	LXA2	04/19/18	1042	1756893	2
Nitrate-N	D	4800	66.0	250	ug/L		2					
Sulfate	D	165000	2660	8000	ug/L		20	LXA2	04/19/18	1922	1756893	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	
3	9056_ANIONS_IC	

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF S18-004

Client Sample ID: B3HT38
Sample ID: 448316004
Matrix: WATER
Collect Date: 17-APR-18 09:00
Receive Date: 18-APR-18
Collector: Client

Project: CPRC0S18004
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride	B	145	33.0	500	ug/L		1	LXA2	04/19/18	0634	1756893	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	17700	134	400	ug/L		2	LXA2	04/19/18	1112	1756893	2
Nitrate-N	D	5940	66.0	250	ug/L		2					
Sulfate	D	177000	2660	8000	ug/L		20	LXA2	04/19/18	1952	1756893	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	
3	9056_ANIONS_IC	

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF S18-004

Client Sample ID: B3HT51
Sample ID: 448316005
Matrix: WATER
Collect Date: 17-APR-18 09:15
Receive Date: 18-APR-18
Collector: Client

Project: CPRC0S18004
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride	B	304	33.0	500	ug/L		1	JXH5	04/18/18	2145	1756886	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	17300	335	1000	ug/L		5	JXH5	04/19/18	1148	1756886	2
Nitrate-N	D	5610	165	500	ug/L		5					
Sulfate	D	190000	2660	8000	ug/L		20	JXH5	04/19/18	2135	1756886	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	
3	9056_ANIONS_IC	

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF S18-004

Client Sample ID: B3HVC9
Sample ID: 448316006
Matrix: WATER
Collect Date: 17-APR-18 08:49
Receive Date: 18-APR-18
Collector: Client

Project: CPRC0S18004
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride	B	261	33.0	500	ug/L		1	JXH5	04/18/18	2318	1756886	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	21500	335	1000	ug/L		5	JXH5	04/19/18	1045	1756886	2
Nitrate-N	D	7350	165	500	ug/L		5					
Sulfate	D	183000	2660	8000	ug/L		20	JXH5	04/19/18	2307	1756886	3

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	
3	9056_ANIONS_IC	

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF S18-004

Client Sample ID: B3HVF1
Sample ID: 448316007
Matrix: WATER
Collect Date: 17-APR-18 08:47
Receive Date: 18-APR-18
Collector: Client

Project: CPRC0S18004
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride	B	305	33.0	500	ug/L		1	JXH5	04/18/18	2349	1756886	1
Nitrate-N		4700	33.0	250	ug/L		1					
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	11400	335	1000	ug/L		5	JXH5	04/19/18	1117	1756886	2
Sulfate	D	67600	665	2000	ug/L		5					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF S18-004

Client Sample ID: B3HV15
Sample ID: 448316008
Matrix: WATER
Collect Date: 17-APR-18 09:32
Receive Date: 18-APR-18
Collector: Client

Project: CPRC0S18004
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride	B	376	33.0	500	ug/L		1	JXH5	04/19/18	0019	1756886	1
Nitrate-N		3610	33.0	250	ug/L		1					
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	10400	670	2000	ug/L		10	JXH5	04/19/18	1319	1756886	2
Sulfate	D	90600	1330	4000	ug/L		10					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF S18-004

Client Sample ID: B3HV20
Sample ID: 448316023
Matrix: WATER
Collect Date: 17-APR-18 09:50
Receive Date: 18-APR-18
Collector: Client

Project: CPRC0S18004
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis												
2320_ALKALINITY: GW 01 "As Received"												
Alkalinity, Total as CaCO3		118000	1450	4000	ug/L			RXB5	04/21/18	1331	1757257	1
Bicarbonate alkalinity (CaCO3)		118000	1450	4000	ug/L							
Carbonate alkalinity (CaCO3)	U	1450	1450	4000	ug/L							
Hydroxide alkalinity as CaCO3	U	1450	1450	4000	ug/L							

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	2320_ALKALINITY	

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF S18-004

Client Sample ID: B3HV21
Sample ID: 448316025
Matrix: WATER
Collect Date: 17-APR-18 09:50
Receive Date: 18-APR-18
Collector: Client

Project: CPRC0S18004
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis												
2320_ALKALINITY: GW 01 "As Received"												
Alkalinity, Total as CaCO3		118000	1450	4000	ug/L			RXB5	04/21/18	1333	1757257	1
Bicarbonate alkalinity (CaCO3)		118000	1450	4000	ug/L							
Carbonate alkalinity (CaCO3)	U	1450	1450	4000	ug/L							
Hydroxide alkalinity as CaCO3	U	1450	1450	4000	ug/L							

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	2320_ALKALINITY	

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

Quality Control Summary

GEL LABORATORIES LLC
2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: May 2, 2018

CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington

Contact: **Mr. Scot Fitzgerald**

Workorder: **448316**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Ion Chromatography										
Batch 1756886										
QC1204011852 448316005 DUP										
Chloride	D	17300	D	17300	ug/L	0.00577		(0%-20%)	JXH5	04/19/18 12:19
Fluoride	B	304	B	313	ug/L	2.89 ^		(+/-500)		04/18/18 22:16
Nitrate-N	D	5610	DX	5650	ug/L	0.577		(0%-20%)		04/19/18 12:19
Nitrite-N	U	33.0	U	33.0	ug/L	N/A				04/18/18 22:16
Sulfate	D	190000	D	190000	ug/L	0.0453		(0%-20%)		04/19/18 22:05
QC1204011851 LCS										
Chloride	5000			4780	ug/L		95.5	(80%-120%)		04/18/18 21:14
Fluoride	2500			2540	ug/L		101	(80%-120%)		
Nitrate-N	2500			2420	ug/L		96.9	(80%-120%)		
Nitrite-N	2500			2440	ug/L		97.8	(80%-120%)		
Sulfate	10000			9830	ug/L		98.3	(80%-120%)		
QC1204011850 MB										
Chloride			U	67.0	ug/L					04/18/18 20:43
Fluoride			U	33.0	ug/L					
Nitrate-N			U	33.0	ug/L					

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2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: **448316**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Ion Chromatography											
Batch 1756886											
Nitrite-N				U	33.0	ug/L				JXH5	04/18/18 20:43
Sulfate				U	133	ug/L					
QC1204011853 448316005 PS											
Chloride	5.00	D	3.47	D	8.82	mg/L		107	(75%-125%)		04/19/18 12:50
Fluoride	2.50	B	0.304		2.83	mg/L		101	(75%-125%)		04/18/18 22:47
Nitrate-N	2.50	D	1.12	DX	3.73	mg/L		104	(75%-125%)		04/19/18 12:50
Nitrite-N	2.50	U	0.00		2.51	mg/L		100	(75%-125%)		04/18/18 22:47
Sulfate	10.0	D	9.49	D	20.0	mg/L		105	(75%-125%)		04/19/18 22:36
Batch 1756893											
QC1204011860 448316001 DUP											
Chloride		D	16700	D	16700	ug/L	0.0658		(0%-20%)	LXA2	04/19/18 17:52
Fluoride		B	131	B	133	ug/L	1.44 ^		(+/-500)		04/19/18 04:34
Nitrate-N		D	5990	D	5980	ug/L	0.13		(0%-20%)		04/19/18 09:42
Nitrite-N		U	33.0	U	33.0	ug/L	N/A				04/19/18 04:34
Sulfate		D	96300	D	96100	ug/L	0.28		(0%-20%)		04/19/18 17:52
QC1204011859 LCS											
Chloride	5000				4830	ug/L		96.6	(80%-120%)		04/19/18 03:34
Fluoride	2500				2650	ug/L		106	(80%-120%)		

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QC Summary

Workorder: **448316**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Ion Chromatography											
Batch 1756893											
Nitrate-N	2500				2480	ug/L		99.4	(80%-120%)	LXA2	04/19/18 03:34
Nitrite-N	2500				2530	ug/L		101	(80%-120%)		
Sulfate	10000				10200	ug/L		102	(80%-120%)		
QC1204011858 MB											
Chloride				U	67.0	ug/L					04/19/18 03:05
Fluoride				U	33.0	ug/L					
Nitrate-N				U	33.0	ug/L					
Nitrite-N				U	33.0	ug/L					
Sulfate				U	133	ug/L					
QC1204011861 448316001 PS											
Chloride	5.00	D	1.67	D	6.59	mg/L		98.4	(75%-125%)		04/19/18 18:22
Fluoride	2.50	B	0.131		2.69	mg/L		102	(75%-125%)		04/19/18 05:04
Nitrate-N	2.50	D	2.99	D	5.79	mg/L		112	(75%-125%)		04/19/18 10:12
Nitrite-N	2.50	U	0.00		2.46	mg/L		98.3	(75%-125%)		04/19/18 05:04
Sulfate	10.0	D	9.63	D	20.1	mg/L		105	(75%-125%)		04/19/18 18:22
Titration and Ion Analysis											
Batch 1757257											
QC1204012751 447585014 DUP											
Alkalinity, Total as CaCO3			101000		100000	ug/L	1.19		(0%-20%)	RXB5	04/21/18 12:56

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2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: **448316**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch 1757257											
QC1204012750 LCS											
Alkalinity, Total as CaCO3	100000			108000	ug/L		108	(80%-120%)	RXB5	04/21/18	12:43

Notes:

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Radiological Analysis

Case Narrative

Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL448316
Work Order #: 448316

Product: **I129LL_SEP_LEPS_GS: COMMON (low level)**
Analytical Method: DOE EML HASL-300,I-01 Modified
Analytical Procedure: GL-RAD-A-006 REV# 21
Analytical Batch: 1755934

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
448316027	B3HTW4
1204009337	Method Blank (MB)
1204009338	447943002(B3HT13) Sample Duplicate (DUP)
1204009339	447943002(B3HT13) Matrix Spike (MS)
1204009340	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: **SRISO_SEP_PRECIP_GPC: COMMON**
Analytical Method: SRISO_SEP_PRECIP_GPC
Analytical Procedure: GL-RAD-A-004 REV# 19
Analytical Batch: 1758710

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
448316017	B3HTP1
1204016114	Method Blank (MB)
1204016115	447719003(NonSDG) Sample Duplicate (DUP)
1204016116	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: **TRITIUM_DIST_LSC: COMMON**
Analytical Method: TRITIUM_DIST_LSC
Analytical Procedure: GL-RAD-A-002 REV# 22
Analytical Batch: 1758611

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
448316028	B3HWN5
1204015853	Method Blank (MB)
1204015854	448639029(NonSDG) Sample Duplicate (DUP)
1204015855	448639029(NonSDG) Matrix Spike (MS)
1204015856	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Miscellaneous Information

Additional Comments
The matrix spike, 1204015855 (Non SDG 448639029MS), aliquot was reduced to conserve sample volume.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL448316 GEL Work Order: 448316

The Qualifiers in this report are defined as follows:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:  **Name: Kate Gellatly**

Date: 11 MAY 2018 **Title: Analyst I**

Sample Data Summary

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL448316**	**Client:**	**CPRC001**	**Project:**	**CPRC0S18004**
Lab Sample ID:	**448316017**	**Date Collected:**	**04/17/2018 08:18**	**Matrix:**	**WATER**
		Date Received:	**04/18/2018 08:40**		
Client ID:	**B3HTP1**			**Prep Basis:**	**"As Received"**
Batch ID:	**1758710**	**Method:**	**SRISO_SEP_PRECIP_GPC**	**SOP Ref:**	**GL-RAD-A-004**
Run Date:	**04/28/2018 09:34**	**Analyst:**	**KSD1**	**Instrument:**	**PIC7B**
Data File:	**S1758710.xls**	**Aliquot:**	**300 mL**	**Count Time:**	**60 min**
Prep Batch:	**1758710**	**Prep Method:**	**EPA 905.0 Modified/DOE RP5**		
Prep Date:	**04/26/2018 09:12**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10098-97-2	Strontium-90	U	0.692	pCi/L	+/-0.697	0.705	1.15	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	4.50	4.30	mg	105	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL448316**	**Client:**	**CPRC001**	**Project:**	**CPRC0S18004**
Lab Sample ID:	**448316027**	**Date Collected:**	**04/12/2018 10:40**	**Matrix:**	**WATER**
		Date Received:	**04/18/2018 08:40**		
Client ID:	**B3HTW4**			**Prep Basis:**	**"As Received"**
Batch ID:	**1755934**	**Method:**	**DOE EML HASL-300,I-01 Mo**	**SOP Ref:**	**GL-RAD-A-006**
Run Date:	**04/23/2018 09:12**	**Analyst:**	**BSW1**	**Instrument:**	**XRAY6**
Data File:	**I448316027.CNF;1**	**Aliquot:**	**1.2 L**	**Count Time:**	**120 min**
Prep Batch:	**1755934**	**Prep Method:**	**DOE EML HASL-300,I-01 M**		
Prep Date:	**04/20/2018 10:25**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		3.58	pCi/L	+/-1.20	1.25	0.707	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL448316**	**Client:**	**CPRC001**	**Project:**	**CPRC0S18004**
Lab Sample ID:	**448316028**	**Date Collected:**	**04/17/2018 09:32**	**Matrix:**	**WATER**
		Date Received:	**04/18/2018 08:40**		
Client ID:	**B3HWN5**			**Prep Basis:**	**"As Received"**
Batch ID:	**1758611**	**Method:**	**TRITIUM_DIST_LSC**	**SOP Ref:**	**GL-RAD-A-002**
Run Date:	**04/26/2018 22:27**	**Analyst:**	**MXH8**	**Instrument:**	**LSCBLUE**
Data File:	**T1758611.xls**	**Aliquot:**	**50 mL**	**Count Time:**	**50 min**
Prep Batch:	**1758611**	**Prep Method:**	**EPA 906.0 Modified**		
Prep Date:	**04/26/2018 08:24**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		1270	pCi/L	+/-222	331	292	400

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The MDC is a sample specific MDC.

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352

Contact: Mr. Scot Fitzgerald

Workorder: 448316

Report Date: May 11, 2018

Parmname	NOM		Sample	Qual	QC	Units	QC Criteria		Range	Analyst	Date Time
Rad Gamma Spec											
Batch 1755934											
QC1204009337 MB											
Iodine-129				U	-0.0707	pCi/L				BSW1	04/23/1810:53
Uncert:					+/-0.367						
TPU:					+/-0.369						
QC1204009338 447943002 DUP											
Iodine-129		X	0.997	U	0.353	pCi/L					04/23/1811:06
Uncert:			+/-0.824		+/-0.379		RPD:	29	(0% - 100%)		
TPU:			+/-0.830		+/-0.412		RER:	1.36	(0-2)		
QC1204009339 447943002 MS											
Iodine-129	37.5	X	0.997		37.2	pCi/L	REC:	96	(75%-125%)		04/23/1811:16
Uncert:			+/-0.824		+/-3.26						
TPU:			+/-0.830		+/-4.94						
QC1204009340 LCS											
Iodine-129	37.5				37.8	pCi/L	REC:	101	(80%-120%)		04/23/1811:17
Uncert:					+/-3.99						
TPU:					+/-5.49						
Rad Gas Flow											
Batch 1758710											
QC1204016114 MB											
Strontium-90				U	-0.281	pCi/L				KSD1	04/28/1809:34
Uncert:					+/-0.769						
TPU:					+/-0.769						
**Strontium Carrier	4.30				3.70	mg	REC:	86	(40%-110%)		
QC1204016115 447719003 DUP											
Strontium-90		U	0.0374	U	-0.0654	pCi/L					04/28/1809:34
Uncert:			+/-0.700		+/-0.475		RPD:	0	N/A		
TPU:			+/-0.700		+/-0.475		RER:	0.238	(0-2)		
**Strontium Carrier	4.30		4.00		4.50	mg	REC:	105	(40%-110%)		
QC1204016116 LCS											
Strontium-90	78.2				66.9	pCi/L	REC:	86	(80%-120%)		04/28/1809:34
Uncert:					+/-3.54						
TPU:					+/-11.6						
**Strontium Carrier	4.30				4.30	mg	REC:	100	(40%-110%)		
Rad Liquid Scintillation											
Batch 1758611											
QC1204015853 MB											
Tritium				U	81.8	pCi/L				MXH8	04/27/1801:03
Uncert:					+/-162						
TPU:					+/-163						
QC1204015854 448639029 DUP											
Tritium			2040		2170	pCi/L					04/27/1801:55
Uncert:			+/-242		+/-254		RPD:	6	(0%-20%)		
TPU:			+/-463		+/-490		RER:	0.361	(0-2)		
QC1204015855 448639029 MS											

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QC Summary

Workorder: **448316**

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Liquid Scintillation									
Batch 1758611									
Tritium	5110	2040		6910	pCi/L	REC: 95	(75%-125%)		
	Uncert:	+/-242		+/-971					
	TPU:	+/-463		+/-1650					
QC1204015856 LCS									
Tritium	2550			2040	pCi/L	REC: 80	(80%-120%)		04/27/1803:05
	Uncert:			+/-406					
	TPU:			+/-566					

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

*	Duplicate analysis not within control limits
+	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
<	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
>	Result greater than quantifiable range or greater than upper limit of the analysis range
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
B	The analyte was detected in the associated method blank >/= MDC or >5% sample activity.
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
D	Results are reported from a diluted aliquot of sample.
E	Reported value is estimated due to interferences. See comment in narrative.
M	Duplicate precision not met.
N	Spike Sample recovery is outside control limits.
S	Reported value determined by the Method of Standard Additions (MSA)
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
UX	Gamma Spectroscopy--Uncertain identification
W	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
** Indicates analyte is a surrogate compound.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptence criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.